

REMARKS

Applicant hereby affirms the election of method claims 1-15 and 17, with traverse. Claim 16 has been withdrawn pursuant to 35 U.S.C. § 121. Accordingly, claims 1-15 and 17 are currently under consideration.

Initially, Applicant notes that the present Office Action does not acknowledge two submissions by Applicant. The first submission was a Preliminary Amendment to change the specification to include a statement of government interest that was filed on February 25, 2005 and the second submission was an Information Disclosure Statement that was filed on March 25, 2005. The Information Disclosure Statement appears to list the same references that the Examiner cites in the 892 Form with the current Office Action. Applicant respectfully solicits acknowledgement of these two submissions.

Claims 1, 12, 15 and 17 were amended to more distinctly claim the subject matter. In particular, claims 1 and 12 were amended to recite that the substrate has a surface consisting essentially of silicon and that the boride film is formed on this surface. Claim 15 was amended to be consistent with independent claim 12 and to include the transitional phrase “comprising” in the claim. Claim 17 was amended to recite that the formed thin film is a superconductive magnesium boride

Adequate written descriptive support for the present amendments should be apparent from the detailed specification. For example, in paragraph 6 of the specification, Applicant describes problems encountered in depositing magnesium boride thin films which includes magnesium's reactivity with silicon and silicon oxides on a silicon surface. In an aspect of the present invention, Applicant describes in paragraph 13 of the specification that the magnesium boride film is in direct contact with the surface of a silicon substrate and that the interference between the magnesium boride film and substrate is substantially free of magnesium-silicon

compounds. Accordingly, it is respectfully submitted that the amendment to include the term a substrate having a surface consisting essentially of silicon is supported by the original specification. The remaining amendments are also supported by the detailed specification.

REJECTION UNDER 35 USC 112

Claims 1-15 and 17 were rejected under 35 U.S.C. § 112, first paragraph, because they allegedly do not enable forming magnesium diboride films that are not superconductive. The rejection is traversed and it is respectfully submitted that one of ordinary skill in the art would have no difficulty preparing a magnesium boride film that is not superconductive given the detailed specification. In fact, Applicant provides a phase diagram with experimental details to facilitate the understanding and practice of forming magnesium boride films that are both superconductive and non-superconductive in character.

Nevertheless, to advance prosecution, Applicant has amended independent claims 1, 12, and 17 to recite that the magnesium boride film is superconductive. Accordingly, reconsideration and withdrawal of the rejections are respectfully solicited.

REJECTION UNDER 35 USC 102

Claims 1-8, 10-12, 14, 15 and 17 were rejected under 35 U.S.C. § 102 as being unpatentable over Zeng I (6,797,341) or Zeng II (In situ epitaxial MgB₂ thin films for superconducting electronics). The rejections are traversed and it is respectfully submitted that these claims are not anticipated by the cited references.

In particular, independent claims 1 and 12 are directed to a method of forming a magnesium boride film on a silicon substrate. The methods comprise at least introducing a silicon substrate having a surface consisting essentially of silicon into a chamber. Neither cited

reference discloses at least this feature of the claimed subject matter. Accordingly, claims 1-15 are not anticipated by either reference.

Further, independent claim 17 recites the step of maintaining magnesium vapor at a magnesium partial pressure within a specified range. The relationship described in claim 17 is not disclosed in either of the cited references. Accordingly, independent claim 17 is not anticipated by Zeng I or Zeng II. Reconsideration and withdrawal of the rejections are respectfully solicited.

REJECTION UNDER 35 USC 103

Claims 9, 13 and 17 were rejected under Zeng I (6,797,341) or Zeng II. The rejections are traversed and it is respectfully submitted that claims 9, 13 and 17 are patentable within the meaning of 35 U.S.C. § 103.

It is respectfully submitted that the applied reference of Zeng I (6,797,341) does not qualify as prior art under 35 USC 103(c) to the present application. Applicant respectfully submits that the entire rights to the subject matter of Zeng I and the claimed invention were commonly owned by the same organization, or subject to an obligation of assignment to the same organization at the time that the claimed invention was made. Accordingly, reconsideration and withdrawal of the rejection predicated on Zeng I is respectfully solicited.

Further, Zeng II does not render obvious claims 9, 13 or 17. Each of these claims recite a relationship for the vapor pressure for the formation of a magnesium boride film on a silicon substrate.

In contrast, Zeng II does not disclose this relationship nor does Zeng II disclose the formation of magnesium boride films on silicon substrates. Accordingly, it is respectfully submitted that one of ordinary skill in the art would not have arrived at the presently claimed

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subject matter with Zeng II in hand. Reconsideration and withdrawal of the rejection are respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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